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Original Article

A Clinico-epidemiological study of painful skin tumors in the West of Iran over eight years (2012-20)

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Abstract

Background Painful Skin Tumors (PSTs) are uncommon .They induce pain with variable severity and their definitive diagnosis requires para-clinical assessment. This study was done to explore some clinico-epidemiological characteristics of PSTs.

Methods This descriptive analytic study was done on patients clinically suspected of PSTs, which was confirmed by para-clinical assessment. Demographic data of the patients and clinical characteristics of PSTs were recorded. Data analysis was done by appropriate statistical tests.

Results A total of 95 patients (54 females and 41 males), with mean age of 33.88±10.56 years, disease history of 15.26±11.33 months, and tumor size of 4.37±3.75 mm were recruited in this study. Our study showed angiolipoma (31.6%) as the most common PSTs. PSTs were also more common as a solitary lesion (91.6%), without familial history (93.7%) in upper limbs (46.3%) with moderate and severe pain (80%). There was a significant relationship between multiple tumors and severity of the pain, location of the tumor, type of lesion, and positive family history ($p < 0.05$).

Conclusion Although our study showed the majority of neuroma and glomus tumors had severe pain, there was no statistically significant relationship between them. However, familial, multiple, and generalized dermatofibroma had significantly mild pain.

Key words
Painful skin tumor, angiolipom, glomus tumor, dermatofibroma.

Introduction

Unlike the high prevalence of non-melanoma skin cancer, painful skin tumors (PSTs) are uncommon cutaneous and subcutaneous tumors. PSTs can result in discomfort, interference with a number of life activities, and concern for malignancy. Their accurate diagnosis is difficult based on clinical findings and requires para-clinical assessment.[1-5]

Cutaneous metastasis from the internal malignancy is unusual and occasionally induces painful nodule.[6,7]

The exact mechanism of pain in PSTs is not clear and the severity of pain is also variable.[8]

A number of studies have used acronyms such

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as "GLENDA", "ENGLAND", "LEND AN EGG" and "BLEND TAN EGG" to refer to these PSTs: angiolipom, blue rubber bleb nevus, dermatofibroma, eccrine spiradenoma, endometrioma, glomus tumor, granular cell tumor, leiomyoma, neurolimmoma, neuroma, and tufted angioma.[1,3]

The purpose of this study was to evaluate the clinical and epidemiological aspects of PSTs in our referral dermatology clinic over eight years, from 2012 to 2020.

Methods

This descriptive analytic study was done on patients clinically suspected of PSTs, which was confirmed by histopathologic examination, occasionally high-resolution ultrasound, and immunohistochemistry.

Patients with neuro-psychiatric disorders, erythema nodusom, injection of site-enhancing-oils or other material, infected or inflammatory cyst, and cutaneous metastasis were excluded from study.

After documentation of PSTs, the demographic data of patients and clinical characteristics of PSTs were recorded.

We classified severity of pain in the patients as:

Mild pain: there is no pain at rest, but it is evoked by moderate-to-severe pressure on the nodule or tumor.

Moderate pain: there is occasional pain at rest, but it is evoked by mild-to-moderate pressure on the nodule or tumor.

Severe pain: usually there is pain at rest, also it is evoked and exacerbated by mild pressure on the nodule or tumor and by environmental stimulation such as cold.

Data were collected via demographic and clinical information. Demographic data included gender and age and clinical information included tumor type, tumor location, and so on.

Data analysis was done by descriptive and inferential statistics. As for descriptive statistics, central tendency and dispersion were reported in statistical tables. For inferential statistics, data analysis was performed by chi-square, Fisher's exact, Mann-Whitney and Kruskal-Wallis tests.

SPSS software (version 16) was used for data analysis, and significance level was set at $p<0.05$ for all tests.

Results

This study recruited 95 patients, including 54 (56.8%) females and 41 (43.2%) males. The age range of the patients was 14-63 years and their mean age was 33.88±10.56. The mean duration of disease was 15.26±11.33 months, ranging from 4 to 60 months. The size range of lesions was 3-75 mm with mean size of 4.37±3.75 mm **(Table 1)**.

Familial history and multiple lesions were found in 6 (6.3%) and 8 (8.4%) patients, respectively.

The lesions were located in the upper limbs, lower limbs, head and neck, generalized, and trunk in 44 (46.3%), 28 (29.5%), 12 (12.6%), 6 (6.3%), and 5(5.3%) patients, respectively. The pain severity was felt as mild, moderate, and severe in 19 (20.0%), 38 (40.0%), and 38 (40.0%) patients, respectively **(Table 1)**.

The results of histopathologic and immunohistochemical evaluation revealed 30(31.6%) angiolipomas, 24 (25.3%) glomus tumors, 18 (18.9%) dermatofibromas, 9 (9.5%) ecrine spiradenomas, 6 (6.3%) neuromas, 6 (6.3%) neurolimmomas, 1 (1.0%) lieomyomas, and 1 (1.0%) tufted angioma **(Table 1)**.

Table 1 Demographic and clinical characteristics of painful skin tumors.

Variables	*N (%age)*
Sex	
Female	54 (56.8%)
Male	41 (43.2%)
Mean of age (years)	33.88±10.56
Familial history	
Positive	6 (6.3%)
Negative	89 (93.7%)
Multiplicity	
Solitary	87(91.6%)
Multiple	8 (8.4%)
Mean of tumor size (mm)	4.37±3.75
Mean time of disease duration (months)	15.26±11.33
Severity of pain	
Mild	19 (20.0%)
Moderate	38 (40.0%)
Sever	38 (40.0%)
Location of tumor	
Upper extremity	44 (46.3%)
Lower extremity	28 (29.5%)
Head and neck	12 (12.6%)
Trunk	6 (6.3%)
Generalized	5(5.3%)
Type of painful skin tumor	
Angiolipoma	30 (31.6%)
Glomous tumor	24 (25.3%)
Dermatofibroma	18 (18.9%)
Eccrine spiradenoma	9 (9.5%)
Neuroma	6 (6.3%)
Neurolimmoma	6 (6.3%)
Lieomyoma	1 (1.0%)
Tufted angiomas	1 (1.0%)

The characteristics of each PSTs based on a number of variables are presented in **Table 2**.

The findings of Mann-Whitney U test showed no significant difference between the mean size of tumor and sex, number of tumors, and family history (p>0.05).

The Fisher's exact test showed no significant relationship between gender and multiplicity of painful tumors (p>0.05). However the results of this test showed a significant relationship between family history and number of tumors (p<0.05).

The chi-square test showed no significant association between gender and age and multiple tumors (p>0.05). Moreover, the results of this test showed a significant relationship between

Table 2 Characteristics of PSTs base on variables.

		Angiolipoma	*Glomous tumor*	*Dermato-fibroma*	*Eccrine spiradenoma*	*Neuroma*	*Neurolimmoma*	*Lieomyoma*	*Tufted angiomas*
Sex	Female	18 (83.3%)	12 (50%)	12 (66.7%)	5 (55.5%)	2(33.3%)	3 (50%)	1 (100%)	1 (100%)
	Male	12 (16.7%)	12 (50%)	6 (33.3%)	4 (44.5%)	4 (66.7%)	3 (50%)	0 (0%)	0 (0%)
Mean of age (years)		34.8%	43.8	27.7	32.7	30.8	33.2	26	18
Familial history	Positive	0 (0%)	0 (0%)	5(27.8%)	0 (0%)	0 (0%)	1(16.7%)	0 (0%)	0 (0%)
	Negative	30 (100%)	24 (100%)	13 (72.2%)	9 (100%)	6 (100%)	5 (83.3%)	1 (100%)	1 (100%)
Multiplicity	Solitary	30 (100%)	23 (95.8%)	13 (72.2%)	9 (100%)	6 (100%)	5 (83.3%)	1 (100%)	0 (0%)
	Multiple	0 (0%)	1 (4.2%)	5 (27.8%)	0 (0%)	0 (0%)	1 (16.7%)	0 (0%)	1 (100%)
Mean of tumor size (mm)		4.1	3.9	5.6	5.4	4	6.5	6	75
Mean time of pain duration (months)		11.8	8.7	29.9	9.4	11.3	14	11	32
Severity of pain	Mild	0 (0%)	0 (0%)	18 (110%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (100%)
	Moderate	21 (70%)	7 (29.2%)	0 (0%)	3 (33.3%)	2 (33.3%)	4 (66.7%)	1 (100%)	0 (0%)
	Sever	9 (30%)	17 (70.8%)	0 (0%)	6 (66.7%)	4 (66.7%)	2 (33.3%)	0 (0%)	0 (0%)
Tumor location	Upper extremity	15 (50%)	18 (75%)	2 (11.1%)	2 (22.2%)	4 (66.7%)	3 (50%)	0 (0%)	0 (0%)
	Lower extremity	9 (30%)	4 (16.7%)	10 (55.5%)	1 (11.1%)	2 (33.3%)	2 (33.3)	0 (0%)	0 (0%)
	Head and neck	6 (20%)	2 (8.3%)	0 (0%)	4 (44.4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
	Trunk	0 (0%)	0 (0%)	2 (11.1%)	2 (22.2%)	0 (0%)	1 (16.7%)	0 (0%)	1 (100%)
	Generalized	0 (0%)	0 (0%)	4 (22.2%)	0 (0%)	0 (0%)	0 (0%)	1 (100%)	0 (0%)

multiple tumors and severity of the pain, location of the tumor, and the type of lesion ($p<0.05$).

Discussion

Our study showed angiolipoma was the most common PSTs. Further, PSTs was more common as a solitary lesion in the upper limbs with moderate and severe pain, mean size of 4.37±3.75 mm, and mean age of 32.88±10.56 years in females.

Although there was no statistically significant relationship between the type of tumor and severity of pain, but most of the neuromas and glomus tumors had severe pain. However, familial, multiple, and generalized dermatofibromas had significantly mild pain.

Most of our patients were in the fourth decade, but patients with glomus tumor had a mean age of about43 years, which is consistent with the findings of other studies.[9,10] Moreover, tufted angioma, a rare painful tumor, is classified into two types, including congenital and acquired tufted angioma. In our study, a patient with acquired tufted angioma was aged 18 years.[1,11]

Our study indicated PSTs were slightly more common in females than males, but dermatofibroma and neuroma were more common in females and males, respectively. We believe that the high prevalence of dermatofibroma in women[13] and the high susceptibility of men to trauma[14] justify our findings.

In many studies, most of the PSTs, except for tufted angioma that had a large size, had a size range of 1-5 mm, which is consistent with our findings.[2,8,15]

In our patients other than dermatofibroma, the remaining PSTs were single and non-familial, which is consistent with the results of previous studies.[1-3,8] There are some studies like our study that have reported multiple cases with familial history of dermatofibroma.[16,17]

There was a difference in the duration of lesions among various PSTs in our patients. Shorter duration of lesions and earlier attendance of patients might be related to the severity of pain, location of lesion, and concern for malignancy. Therefore, glomus tumor, which was usually associated severe pain in the upper extremities, resulted in early attendance of patients. But mild pain, multiplicity and, positive familial history in the majority of dermatofibromas led to the delayed attendance of patients.

As with previous studies,[2,3,8,15] the upper and lower extremities in our patients were the most common sites of involvement, respectively. The importance of existence of PSTs in places exposed to pressure during work or daily activities can lead to pain provoking, referral to physician, and treatment request.

We found that about half of the eccrine spiradenomas were seen in the head and neck area, as in some studies,[8,18] the majority of tumors have been found in the head and neck area.

In many studies, angiolipoma was a rare or uncommon skin tumor which was mostly located in the fore arm of the young adults.[1,14,15,19,20] Our findings indicated angiolipoma was the most common skin tumor associated with pain. We think the overall prevalence of angiolipoma is rare, but it is a common lesion as PSTs.

In our patients leiomyoma and tufted angioma were less common prevalent amongst PSTs, which is consistent with the results of others studies.[11,21]

PSTs are differentiated into mesenchymal and adenexal types, a mechanism that cannot be involved in pain production. In some PSTs such as glomus tumor and lieomyoma, pain is related to nerve distribution in these types of tumors and tumor function is associated with pain induction in the numbers of others PSTs.[8]

In most of our patients, the severity of pain in the PSTs was moderate or severe.

Also among our patients, all dermatofibroma lesions were associated with mild pain, while a vast majority of neuromas and glomus tumors had severe pain. Therefore, the severity of pain could be an important finding to suggest the clinical diagnosis of some PSTs.

Conclusion

Most of patients with neuroma and glomus tumor had severe pain. Nevertheless, there was no significant relationship between PSTs and severity of pain. But familial, multiple, and generalized dermatofibroma had significantly mild pain. We suggest the future studies be conducted in several centers with more PSTs and more focus on different aspects of pain in PSTs.

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